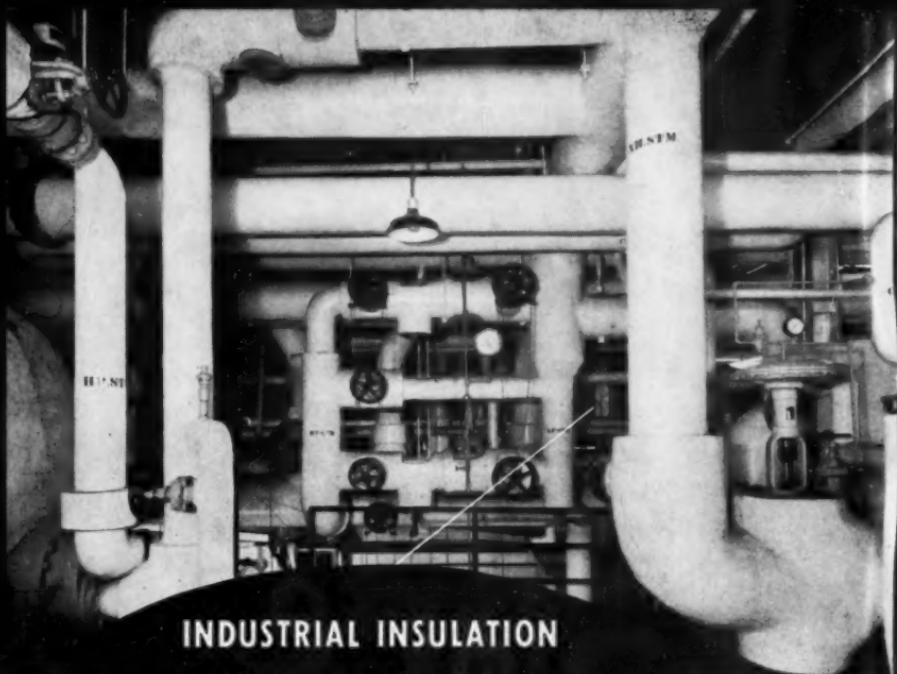


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INSULATION OF ROTATING ELECTRICAL MACHINERY

By E. Jones, B.Sc. (Eng.) M.I.E.E., A.M.I. Mech. E.
A. M. Amer., I.E.E., Chief Insulation Engineer.

The chapter on Asbestos quoted from the above article is in all essentials a reproduction of the paper presented by the author for the Symposium of Papers on Insulating Materials at the Institution of Electrical Engineers on the 18th of March 1953, and is published in The English Electrical Journal by the courtesy of that Institution.

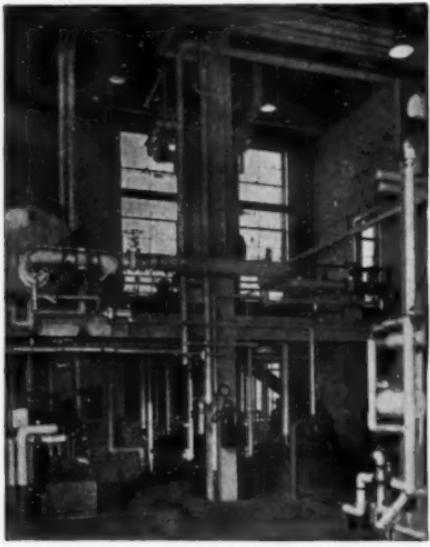
Any discussion on the use of asbestos textiles in the insulation of electrical machines must inevitably contain some comparison with glass textiles. Both these materials are extremely valuable to the insulation engineer and each has its place in insulation designs.

Woven Tapes and Cloths

Prior to 1937 the only textile material suitable for class-B machine insulation was woven from asbestos yarns, and the asbestos tapes available at that time suffered from a number of very serious drawbacks. For example, they were appreciably conducting, especially under damp conditions, owing to the presence of electrolytes; they were not very strong mechanically, and they could not be obtained thinner than 10 mils and even this only by heavy calendering, which meant that the tapes would "swell" to about 12 mils during storage.

The use of electrical glass tape eliminated the leakage troubles, but glass textiles brought other problems, such as the difficulty of producing satisfactory Bakelized slot sections on traction armature coils. A Bakelized glass-tape finish on an armature-coil slot portion is very robust mechanically. A Bakelized glass-tape finish is much more sensitive to abrasion during winding, and other methods of "blocking" the slot portions had to be developed which were still not so robust as the Bakelized asbestos finish.

In 1940 an improved type of asbestos tape was produced which was made from specially selected and spec-



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ially treated asbestos. These tapes have a very much better electrical performance than the old type of asbestos tapes. The improved asbestos tape has the robustness and abrasion resistance of the old type of tape, although the tensile strength is somewhat lower. The electrical properties of the improved tape are sufficiently good to permit its use in 3,000-volt d.c. windings, although it is probable that many manufacturers would still prefer to use glass textiles for such machines.

The tensile strength of the improved asbestos tape is much lower than that of glass tape of the same thickness, but the asbestos tape has appreciably greater stretch and consequently its lower tensile strength does not usually present a serious problem.

It is perhaps unfortunate that asbestos tapes are not available in a thickness of 5-6 mils. If it were possible to produce a 5-6 mil asbestos tape with a tensile strength of not less than that of the present 10-mil asbestos tape, it is probable that an appreciable amount of the 5-mil glass tape at present used would be replaced by asbestos tape.

Asbestos tapes contain up to 15% by weight of cotton fibres, which is necessary to increase the yarn strength. It would not appear unreasonable to replace this cotton by glass fibres, which would undoubtedly improve the tensile strength of the tape and eliminate the present rather high organic content. Alternatively, it might be interesting to use Terylene or nylon fibers in place of cotton. Mixed textiles have been produced, but these have mainly been made by replacing either the weft or the warp threads by some material other than asbestos. Such mixed weaves have their uses, but much remains to be done.

Sleevings and Cordage

Asbestos sleeveings are little used in rotating machines, as the minimum wall thickness available is about 30 mils, which is much too great for many purposes. Furthermore, the electrical properties of such sleeveings are comparatively poor. One interesting application of asbestos sleeveings is the insulation of conductor subdivisions in transposed conductors for high-voltage large

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a.c. machines. In this application the electrical characteristics of the sleeving are relatively unimportant. Asbestos sleeveings are, of course, used extensively as a wire covering in domestic appliances.

Asbestos cords and ropes have a certain use in machines, mainly for packing and filling. When saturated with synthetic-resin varnish or with polyester resins, very robust packings and fillings can be achieved.

Laminates

Synthetic-resin-bonded asbestos woven cloth is of interest mainly because of its mechanical ruggedness and its resistance to heat. Laminates incorporating coarse cloth (cloth thickness approximately 30 mils) have very poor electrical properties and they can be considered as insulating materials only at very low voltages and electric stresses of less than about one volt per mil. These coarse laminates have high tensile, compression and impact strengths, and are also very resistant to abrasion. Such materials are useful where mechanical strength at high temperatures (up to 150°C) is required, such as, for example, end-winding packing blocks in turbo-alternator rotor windings. Laminates of this type are also sometimes used for armature slot wedges.

The electrical properties of synthetic-resin-bonded laminates of fine asbestos cloth (cloth thickness approximately 15 mil) are superior to those of coarse cloth laminates. Fine cloth laminates can under certain conditions be stressed continuously at up to 40 volts/mil for laminate thicknesses of $\frac{1}{8}$ in. or less. Fine laminates do not seem to be used very widely, probably because of their comparatively high cost and scarcity. Mention has been made of the use of Bakelized asbestos cloth troughs for turbo-alternator rotors.

Asbestos-cloth laminates bonded with melamine resins have found a certain amount of use, particularly in America; such a material has almost no proneness to track, and this is a most useful characteristic under damp or dirty conditions.

Synthetic-resin-bonded asbestos-paper laminates are of considerable value when a heat-resisting material of



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For many other products such as adhesives, asphalt tile, texture paints, auto underbody coatings, and friction materials . . . these versatile asbestos "shorts" and "floats" provide important advantages when used as fillers, extenders, conditioners, reinforcers, and heat-resisting agents.

If you would like further information about the various uses, properties and classifications of these versatile forms of asbestos, write to us now for Brochures AFD-3A and 4A.



Asbestos Fibre Division
Canadian Johns-Manville Limited
 970 Sun Life Bldg. (Telephone: UN-6-9701) Montreal, P. Q., Canada

reasonable dielectric properties is required. The mechanical strength of these laminates is good and the dielectric properties are almost comparable with those of laminated cellulose-paper boards to B.S. 1137: 1949, type 3. Asbestos-paper laminates can be used for switch-board panels, terminal boards and packing blocks in machine windings. In common with other types of asbestos laminate, the asbestos-paper laminates has a much higher thermal conductivity than many other such materials. Melamine-resin-bonded asbestos-paper laminates have recently made their appearance in Britain. Such materials should have considerable use where a non-tracking heat-resistance board of reasonable electric strength is needed. The use of asbestos-paper laminates for slot wedges is not completely successful, as the material has a tendency to chip at the edges while the wedges are being driven into position. If the wedges can be inserted satisfactorily they can be successful under service conditions.

Resinated asbestos felt or fleece is not a laminate in the usual sense. The individual sheets of felt are not usually thinner than 1/16 in. By stacking the appropriate number of felts and curing under heat and pressure an immensely strong board can be produced. A fully cured and pressed asbestos-felt board is undoubtedly the strongest board material made from asbestos. Cured resinated-asbestos-felt board may be used for wedges in machines operating at high temperatures.

Wire Coverings

Asbestos coverings for wire and strip are used to a considerable extent in machines, although glass coverings are a serious challenge. Glass coverings are more consistent in thickness and can be obtained much thinner than asbestos coverings. Nevertheless, asbestos coverings are favored in many cases, because of their greater resilience and abrasion resistance. In random windings, e.g. mushroom-wound stators for industrial motors, it is probable that a specially varnished glass-covered wire is superior in a random winding crossed wires can occur, resulting in areas of high local pressure. Specially varnished glass coverings will withstand these high local pressures,

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"ASBESTOS" — October 1954

Page 9

whereas asbestos coverings can be penetrated or torn. For regular windings asbestos coverings are entirely satisfactory, except that the space factor is generally inferior to that of a winding of glass-covered conductors.

It is understood that some attention is being given to the idea of applying asbestos in the form of paper to conductors, the paper being the high-purity material developed in the United States during recent years. Very little information is at present available on asbestos-paper-covered conductors, but it would be expected that a covering of this type would have a higher electric strength than the felted coverings.

Papers

Some years ago a range of high-purity asbestos papers was introduced which opened up new possibilities in high-temperature dielectrics. Mention has been made of the use of these new papers in air-cooled transformers, but little has been said about their use in the insulation of rotating machines.

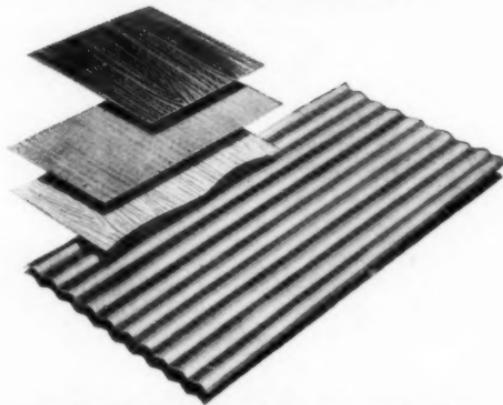
A type of high-purity asbestos paper is now available which is reinforced with glass fibers, and this material would appear to have possible applications in machines, as its tensile strength and resistance to tearing are quite high. The unreinforced asbestos paper is very difficult to handle as it is very weak mechanically, but when combined with glass it is much more interesting. When reinforced with glass and treated in a suitable insulating varnish, the asbestos paper has quite a high short-time electric strength and can replace mica in certain cases. Its long-time electric strength, however, is not high, and in this respect it is very much inferior to mica.

Specially treated asbestos papers have been suggested for commutator separators and small commutator V-rings. The use of a polyester impregnant for the asbestos paper has been mentioned.

Ordinary qualities of asbestos paper treated with a suitable resin or with vulcanized rubber are used to an appreciable extent in machines, particularly for the insulation between the turns of strip-wound field coils for salient-pole alternators, traction motors, etc. There is

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no obvious need for the much more expensive high-purity asbestos papers for such applications. Ordinary asbestos papers in combination with glass and suitable varnish treatments have useful dielectric properties, but superior results are obtained by using high-purity asbestos paper. It has to be borne in mind, however, that the high-purity papers are at present at least 20 times more expensive than ordinary papers.

THE MARLIME CHRYSOTILE ASBESTOS CORPORATION LIMITED

(By Dr. P. Snideman, Managing Director, Marlime Chrysotile Asbestos Corporation, Limited, Johannesburg)

The existence of high grade chrysotile fibre in and around the little village of Moshaneng, which is forty miles from Lobatsi in Bechuanaland, Southern Africa, had been known to Geologists for many years and prospecting was carried out by means of trenching, drilling and shaft-sinking as long ago as 1920, when cobbed fibre was produced in small quantities.

In 1951 Marble, Lime and Associated Industries, Limited acquired a Crown Grant from the Colonial Government over approximately 50 square miles of the territory in which the fibre occurs, and a wholly owned Subsidiary Company known as the Marlime Chrysotile Asbestos Corporation Limited was formed to prove the deposit, and if found satisfactory, to develop it. It soon became clear that the deposit was very extensive, the percentage of fibre yield good, and the quality excellent. The Company thereupon embarked for the next two years on an intensive development programme. During this period too a small plant was erected for the purpose of perfecting the milling technique, and all in all, over a million dollars was spent by the Company to build the new mill and bring the mine to its present production stage of 200 tons of fibre per month.

In cobbed form the color varies from a dark amber to a bright pink, but when milled the fibre is pure white. It has a very high tensile strength and is free of talc. Its



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magnetic iron varies from nil to a trace and its total iron content is only about half of one per cent. It therefore contains probably the lowest iron content of any "iron-free" chrysotile fibre in the world produced commercially, and substantially below the iron content specification of the United States Military (MIL-I-3053A) for their top standard chrysotile requirements. About 25% of the fibre produced is a high spinning grade testing 3D and 3F on the Canadian Test Box. Most of the balance is the equivalent of a Canadian 3Z and 4H, the small quantity of "Shorts" being dumped for the time being.

The portion of the deposit presently being worked comprises a vast basin of dolomite underlain by an intrusive dia-base of dolerite which has resulted in the serpentization of the dolomite. The fibre lodes are generally associated with chert bands and no less than twelve independent parallel lodes have been exposed. The strike has been proved for not less than 2½ miles. The lodes, which vary in width from two to thirty feet in thickness, each contain many seams of fibre up to well over 2". They are remarkably uniform in fibre content and indicates an overall percentage of fibre of approximately 4%. Core drilling and trenching has proved that this formation extends over a considerable portion of the property, indicating many millions of chrysotile-bearing ore.

The Company is particularly careful about the quality of its product and go to extraordinary lengths to ensure a uniformly high standard. A unique feature is that each **individual** bag of the spinning fibre is Canadian-Box-Tested and inspected before being passed for the particular grade, and as the quality itself never varies, uniformity of the product is assured.

The biggest safety show on earth — the annual National Safety Congress and Exposition — will be held in Chicago, October 18-22. More than 12,000 persons from all over the world will hear 600 program participants at 200 sessions discuss the latest advances in accident prevention.



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J-M's NEW MILL at ASBESTOS, QUEBEC

Johns-Manville opened the largest asbestos mill in the world at Asbestos, Quebec. It will mill more than one-third of the free world's supply of asbestos fibre most of which finds its way to the United States to be manufactured into scores of essential products for home, farm, industry and national defense.

Anticipating the trend toward greater mechanization in the asbestos industry, the new Johns-Manville mill will replace several existing mills and provide more modern facilities with increased production capacity at lower operating costs, according to L. M. Cassidy, Chairman of the Board.

The new mill is the latest project of the Quebec asbestos mining industry which has embarked upon a \$70,000,000 program of expansion and development of new mines, mills and machinery.

Dignitaries of church and state joined Johns-Manville officials in the ceremonies putting the first half of the new mill into commercial production. Prime Minister Maurice L. Duplessis of Quebec gave the signal for operations to start.

Others participating in the ceremonies included A. R. Fisher, President, Johns-Manville Corporation; the Most Reverend Philip Carrington, Anglican Archbishop of Quebec; and Monsignor Georges Cabana, Roman Catholic Archbishop of Sherbrooke.

The new mill occupies a 14-story, steel and concrete building that has 22½ acres of floor space. When in full production in early 1956 it will provide additional capacity to reach a total annual production of 625,000 tons of asbestos fibre, and a daily capacity of 60 carloads aggregating 2,500 tons. Adjacent to the famous J-M Jeffrey Mine, long known as the largest asbestos mine in the world, the new mill will draw on ore reserves for more than 100 years of operation at the present rate of production.

"We in Johns-Manville have always considered ourselves as much a part of Canada as of the United States," Mr. Cassidy said. "We have extensive operations in both

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countries. Our new mill is a physical expression of Johns-Manville's determination to serve the public. We in the asbestos industry know that our product is a basic one. Asbestos not only serves homes, industry and mankind in thousands of ways in our day-to-day living. It is also a strategic mineral of the utmost importance in defense requirements. This, our industry is a firm prop for the free world in both peace or war."

Equipped with the most modern lighting, safety devices and dust control equipment, the new Johns-Manville asbestos mill is expected to provide the safest and healthiest working conditions of any fibre mill in Canada or the United States, company officials say.

There are 4,000 separate dust enclosures, utilizing 4 miles of piping and 12 miles of control wiring in the dust control system. It takes 30 acres of cloth to provide bags used in filtering the dust as the ore is milled. When in full operation, the new mill will have air handling equipment capable of purifying 2,500,000 cubic feet of air each minute.

There are 5,000 separate safety guards on the milling equipment and more than 4,600 fluorescent lighting units.

"The asbestos industry is undergoing considerable expansion," Mr. Fisher said. "I know that it will add greatly to Quebec's constantly growing prestige and industrial strength.

"The new Johns-Manville mill will further strengthen the asbestos industry. For, of all the minerals contributing to the wealth of Quebec, none is so important as asbestos. Quebec produces about two-thirds of the free world's supply of this valuable mineral. And today asbestos accounts for almost one-third of the total value of Quebec's mineral output."

The uses of asbestos fibre are unlimited and research and development by companies like Johns-Manville continually develop new uses for the strategic mineral, Mr. Fisher pointed out. Products in which asbestos fibre is incorporated enable industry to produce more and better goods for more people at lower cost through industrial insulations, friction materials, packings, and other products, he said.



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In 1953 production of asbestos fibre in Canada amounted to 911,713 tons at a value of \$87,633,124. This was 65% of the free world's asbestos production. Of this output, 97 percent was exported, mainly to the United States. The United States, which consumes some 70 percent of the free world's production, gets 70 percent of its supply from Canada. Johns-Manville, alone, produces more than half of the asbestos fibre mined in Canada, providing jobs for more than 2,600 men and women at the Asbestos, Quebec, mine, mill and plant operation with an annual payroll in excess of \$10,000,000. The Company operates a second asbestos mine and mill near Matheson, Ontario. This is known as the Munro Mine, which produces about 25,000 tons of asbestos fibre annually.

AFRICAN CHRYSOTILE ASBESTOS LIMITED, BARBERTON, SOUTH AFRICA

The deposit worked by this Company is located some 35 miles from Barberton and approximately 5 miles from the Havelock Mine which is just across the border in the Protectorate of Swaziland. As the name of the company will indicate, the fibre produced is the Chrysotile type known to end users as ACA which is very suitable for the manufacture of Asbestos Cement products. The fibre has excellent tensile strength, is harsh, free of talc with very low iron content and thus has excellent draining and insulation qualities. In addition the fibre is very white and for the reasons given above is much sought after for filtration purposes. Only grades 3 and 4 are produced at present but it is the intention in the near future to recover the lower grades which are presently passing to the dump. The grades now produced represent an approximate recovery of 6%. Operations on a limited scale were started in 1943, but be-

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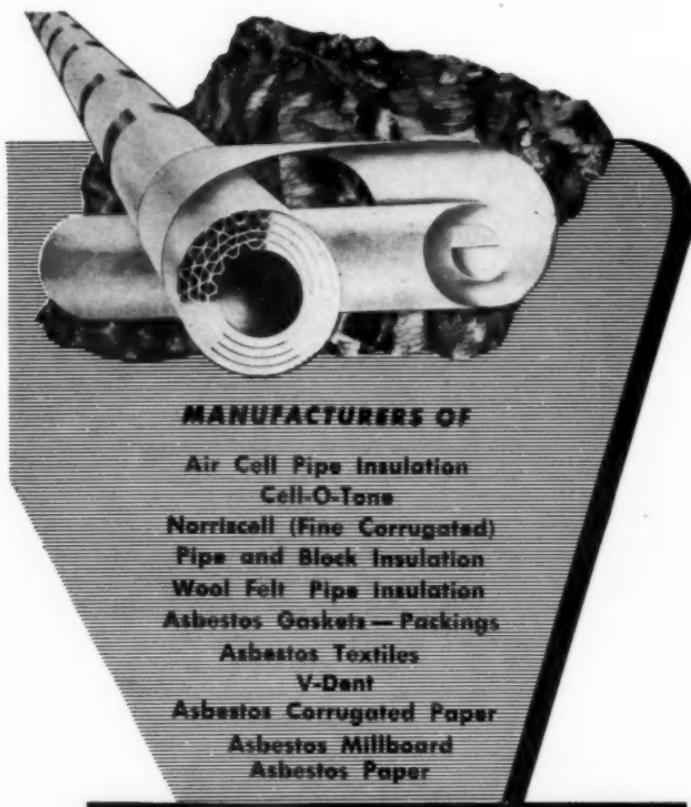
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cause of the remote situation of the deposit in mountainous terrain many difficulties had to be contended with. Little progress could be made until the Provincial Authorities constructed a road to give the Company access to the main Barberton-Swaziland road, a distance of 9 miles. This road was completed in 1951. Since that time excellent progress has been made in developing the property. The first essential was, of course, the provision of housing for both European and Native employees. To date 25 houses with all modern conveniences for Europeans and a Compound to accomodate 550 African Natives have been erected. Mining has been carried on by the open quarry method and it is estimated that ore recovery by this method can be continued for some years. However, in order to increase production a resolution was taken at the end of 1952 to immediately proceed with underground development of the ore body. Good progress has been made with the first vertical shaft. The headgear was recently completed and is already in operation. It is intended to develop underground with a view to employing the ring stopping method of mining. Before proceeding with the underground program extensive drilling operations were carried out to determine the extent of the ore bodies — two of which are being worked and have been proved. This drilling disclosed substantial ore reserves which more than justified embarking on underground mining. Production at present in two relatively small mills is 8,000 tons per annum. With the development envisaged and the known potential of the mine it is reasonable to anticipate that production will be considerably increased in the near future.

A new type of paint for old, weather-beaten asbestos shingles and siding is said to refinish them brighter than new. Easy to brush or spray on, it needs no special primer, dries in 1 to 2 hours. Maker claims it will not blister because it "breathes," letting interior moisture escape but keeping exterior moisture and condensation out. You can use it on ordinary and glazed asbestos shingles, and apply it even when shingles are damp. In white, gray, green or buff. Manufactured by LEHIGH PAINTS, Allentown, Pa.



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MARKET CONDITIONS

GENERAL BUSINESS.

General business appears to be slowly improving. Despite a slight increase in unemployment retail sales are picking up particularly in non-durable goods. Auto production is very low due to model change overs but the car makers anticipate healthy markets for their new models. Home construction continues at a high rate. Steel production shows a slight improvement and machinery sales have continued to increase. Among businessmen, the feeling of optimism noted earlier this year seems to be spreading although there is little evidence of real boom psychology at the moment. The only exception seems to be in the stock market which continues to set new highs almost daily. Even here, however, it will be noted that the "blue chips" rather than the more highly speculative issues are still setting the pace which keeps the market in a relatively strong position.

ASBESTOS — RAW MATERIAL.

Overseas fibre shipments are currently running at better than the average yearly rate and will, no doubt, continue until the close of navigation sometime in the late Fall.

No appreciable pick-up has taken place in the demand for fibre from domestic sources, with the possible exception of Shorts which are in good demand by the major consuming industries.

ASBESTOS — MANUFACTURED GOODS.

Asbestos Textiles. Conditions at present appear to be slightly improved as the U. S. Government has bought rather substantial quantities of cloth for shipment during the next several months. These inquiries have been few in number, with the result that one or two manufacturers literally procured all the business, which takes the pressure off commercial business for those producers.

Asbestos Brake Lining. While competition is becoming keener than ever in the replacement friction materials field, business continues to hold firm with some increase

CANADIAN ASBESTOS FIBERS



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Norbestos (via Warwick)
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NICOLET ASBESTOS MINES LIMITED INC.*
70 Pine Street
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**One of the NICOLET Industries*

noted due to a leveling off of field inventories. Business should continue to be good until the latter part of the year when the normal inventory taking period will reflect itself in lowered sales. The prospects for 1955 look bright for the replacement friction material field since registration will reach an all time high and scrappage of old vehicles being more than offset by the prospects for another above average new car production year.

Asbestos Paper. The demand for flat asbestos paper has increased slightly over last month while commercial rolls are increasing due to seasonal trends. There is little change from last month in the *Millboard* market and competition continues very keen for the business that is available. At the present time, demand for *Saturated Paper* is about equal to production.

Insulation. High Pressure. An improvement has been experienced since last month. More orders have been placed and the market generally is considerably more active. Many sizable contracts that have been quoted but not let have crystallized within the last few weeks.

Insulation. Low Pressure. Volume for this material has improved quite a bit during the past month and should continue to increase due to the oncoming heat season.

Asbestos Cement Products. Although the market is seasonally strong sales for the year will be slightly below last year's figure.

Roofing and siding volume is off and a further drop is anticipated for the balance of the year.

Production for corrugated and flat, at the present time, exceeds the demands for this material.

Demand and production are about equal for all types of pipe but a softening in demand is expected in some sections, with the approach of colder weather.

The above comments have been made by various informed executives in the Industry. All comments are welcome.

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BUILDING

Dodge Reports of contract awards during August for future construction in the 37 states east of the Rockies broke several all-time high records in F. W. Dodge Corporation's 63-year history.

It was the highest August on record; \$1,572,865,000, up 11 per cent over August 1953 and down only 14 per cent under the monumental total of July 1954 which set an all-time July record.

It rounded out the highest first-eight-month total in Dodge history; \$12,660,949,000, up 14 per cent over the first eight months of 1953.

In nonresidential contracts, it set a new high August record; \$550,550,000, up 1 per cent over August 1953; down 14 per cent from July. A fair percentage of contracts in this type of construction will be in progress well into 1955.

The August and eight-month totals brought the prospect that at the year's end a new high record for annual volume will have been set; if so, it will be the ninth consecutive year of construction volume gains. The first eight months averaged \$1,582,617,000; the remaining four months need average only \$1,95,630,000 to break all annual records.

Other August classifications were: residential, \$692,736,000, down 7 per cent from July but up 36 per cent over August 1953; heavy engineering, \$329,579,000, down 27 per cent from July and 9 per cent below August 1953.

Individual eight-month totals compared with the like period 1953 were:

Nonresidential, \$4,600,072,000, up 8 per cent; residential, \$5,418,867,000, up 23 per cent; heavy engineering, \$2,642,010,000, up 9 per cent.

WILHELM BURGDORF
Importer of Raw Asbestos
P. O. Box 1131, BREMEN, GERMANY

AUTOMOBILE SALES

August 1954

Passenger Cars	445,306
Motor Trucks	75,835
Motor Coaches	309
	521,450

In August 1953, a total of 614,655 motor vehicles were sold. In the eight months of 1954 the total was 4,589,355. These figures were supplied by the Automobile Manufacturers Association, New Center Building, Detroit, Michigan.

SITUATION WANTED

Experienced estimator and salesman of piping insulation desires position with independent contractor. Address Box No. 10-CPL-C, "ASBESTOS", 807 Western Saving Fund Bldg., Philadelphia 7, Pa.

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ASBESTOS - ORES - MINERALS

THE ASBESTOS TEXTILE INSTITUTE

The establishment of general headquarters and a research fellowship by the Asbestos Textile Institute on the campus of the Philadelphia Textile Institute, School House Lane and Henry Avenue, Germantown, Philadelphia, Penna., was recently announced by Dr. Myril Clement Shaw, Research Director and General Secretary of the Asbestos Textile Institute.

The Asbestos Textile Institute is an international nonprofit trade association which carries on a continuous program of research and testing for its members and the asbestos industry.



Dr. Myril C. Shaw

Testing Materials, American Trade Association, American Ordnance Association, Registered Professional Engineer in Ohio, Sigma Xi, Keramos Society and American Standards Association.

Dr. Shaw will have his own Research Laboratory and general office in the laboratory building of the Philadelphia Textile Institute and it was announced that he will be available for lectures and consultations with the student body and faculty of the college.

While most of the research work done by the Asbestos Textile Institute is for the benefit of its member companies, certain projects during the past years have received industry-wide attention. Dr. Shaw developed the Abradoflex tester which presents a new approach to the problems of evaluating the abrasion-resistant characteristics of textiles. Under his direction, the Asbestos Textile Institute also published a handbook on asbestos which is available at the Germantown headquarters.

The Asbestos Textile Institute formerly had its headquarters at Rutgers University, New Brunswick, N. J.

WANTED

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subsidiaries:

in the United States

NORTH AMERICAN ASBESTOS CORPORATION

Board of Trade Building, Chicago 4, Illinois

In Canada

CAPE ASBESTOS (Canada) Ltd.

200 Bloor Street East, Toronto, Ontario

PRODUCTION STATISTICS

Canada

(Department of Mines, Province of Quebec)

Tons 2000 lbs.

Production for July 1954	68,255 tons
Compared with July 1953	70,534 tons
Dominion Production for July 1954 is 70,383 tons, a difference of 2,128 tons, from the Quebec figure.	

Africa (Rhodesia)

(Published by Rhodesia Chamber of Mines)

Tons 2000 lbs.

Production for May 1954	6,517.23 tons
Valued at	£480,354
Production for May 1953	8,019.32 tons
Valued at	£665,501

United States

(From U. S. Bureau of Mines)

The actual figures of production of Asbestos in the United States during 1953 have just been received—57,950 tons; compared with 53,888 tons in 1952.

Vermont was the principal producing State. Production in Arizona was lower than in 1952, but the decline was confined to the shorter grades. Sales of the better grades increased moderately.

		1953		1952	
		Tons	Value	Tons	Value
Sold or used					
by Producers	54,456	\$ 4,857,359		53,855	\$ 4,713,032
Imports					
(Unmanufactured)	702,838	59,856,939		709,469	61,604,601
Exports					
(Unmanufactured)	3,076	592,222		10,724	2,670,970
Apparent					
Consumption	754,218	64,122,076		752,609	63,646,663

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IMPORTS AND EXPORTS

Imports Into U. S. A.

(Figures by Bureau of Census)

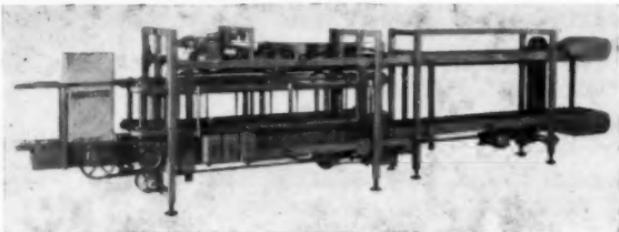
	May 1954
	Tons (2240 lbs.)
<i>Unmanufactured Asbestos—By Countries:</i>	
From Canada	45,058
Union of S. Africa	1,632
Southern Rhodesia	378
Bolivia	29
United Kingdom	36
Other Countries	9
	<hr/> 47,162
Valued at	\$3,997,054
<i>By Grades:</i>	
Crude, Other, Chrysotile, U. of So. Africa	178
Crude, Other, Chrysotile, So. Rhodesia	303
Crude, Other, Chrysotile, Other Countries	5
Crude, Blue, Bolivia	29
Crude, Blue, Union of S. Africa	631
Crude, Amosite, Union of S. Africa	843
Textile Fibres, Chrysotile, Canada	1,176
Textile Fibres, Chrysotile, United Kingdom	36
Textile Fibres, Chrysotile, Other Countries	4
Shingle Fibres, Chrysotile, Canada	4,581
Paper Fibres, Chrysotile, Canada	4,825
Other Fibres, Chrysotile, Canada	34,476
Other Fibres, Chrysotile, So. Rhodesia	75
	<hr/> 47,162

Manufactured Asbestos Goods:

	May 1954	
	Quantity (lbs.)	Value
Asbestos Yarn, Canada	6,515	\$10,436
Asbestos Yarn, United Kingdom	80,345	68,533
Asbestos Packing & Lining	9,306	1,787
Asbestos Shingles (Not Impreg.)	2,800	405
Asbestos Manufactures—Others	1,409
		<hr/> \$82,570

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Baltimore, Seattle, Portland, Dallas, New Orleans

Exports From U. S. A.

(Figures by Bureau of Census)

	June 1954	
	Tons (2240 lbs.)	Value
<i>Unmanufactured Asbestos:</i>		
To: Europe	151	\$16,795
United Kingdom	19	2,807
Other Countries	23	7,086
	<hr/>	<hr/>
	193	\$26,688

Manufactured Asbestos Goods:

	June 1954	
	Quantity	Value
Asbestos Pipe Covg. & Cement	Lbs. 321,682	\$ 31,434
Asbestos Textiles & Yarn	Lbs. 28,389	70,535
Asbestos Packing	Lbs. 148,177	162,353
Asbestos Clutch Facing & Lining	No. 101,772	71,311
Asbestos Bk. Lng. (Mid. & S. Mid.)	Ft. 245,095	64,311
Asbestos Bk. Lng. Rolls (Woven) Lin. Ft.	Lin. Ft. 27,284	25,538
Asbestos Brake Lining Sets	Lbs. 294,732	271,255
Asbestos Construction Materials	Lbs. 2,535,197	211,840
Asbestos Manufactures—Others	32,985
	<hr/>	<hr/>
	\$941,562	

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- **DRIVEABILITY** — Unqualified approval given by leading test laboratories. Millions have been driven.
- **NATIONALLY ADVERTISED** — In leading building and consumer publications.

Many leading asbestos siding manufacturers are including "File-Grip" Aluminum Nails with their product. Literature and samples available upon request.



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Exports from Canada

(Published by Dominion Bureau of Statistics)

July 1954

Tons (2000 lbs.) Value

Unmanufactured Asbestos:

Crude

United States	\$
United Kingdom	\$
South America	\$
Central America & Mexico	\$
European Countries	34	26,102
Other Countries	3	1,351
	37	\$ 27,453

Milled

United States	7,380	\$1,124,377
United Kingdom	3,282	621,093
South America	3,173	553,333
Central America & Mexico	545	86,445
European Countries	5,929	1,128,375
Other Countries	3,951	635,207
	24,260	\$4,148,830

Shorts

United States	34,793	\$1,609,445
United Kingdom	2,667	105,203
South America	677	50,822
Central America & Mexico	280	10,160
European Countries	2,863	196,705
Other Countries	449	32,886
	41,729	\$2,005,821

Grand Total—Unmanufactured Asbestos ...

66,026 \$6,182,104

Manufactured Asbestos Goods:

Brake Lining	\$	44,057
Packing		347
Other Materials		99,370
		\$ 143,774

NEW MANUFACTURING SITE FOR CAREY

Purchase of a tract of land near Atlanta, Georgia, by the Philip Carey Mfg. Company of Cincinnati, Ohio for construction of additional manufacturing facilities was recently announced by J. W. Humphrey, President.

This year Carey built a new warehouse and sales office in Atlanta, and construction of a new plant in this area will augment distribution of their building and industrial products in the South and Southeast. The new manufacturing site is in the Fulton industrial district near the Chattahoochee River.

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NEWS OF THE INDUSTRY

HAPPY BIRTHDAY

David E. Kelley, President, Kelley Asbestos Products Co., Kansas City, Mo., October 16.

H. P. Hansell, Vice-President & General Manager, Dutton Asbestos & Supply Co., San Francisco, Calif.

William F. Reed, President & Treasurer, Asbestos Distributors, Inc., Port Chester, N. Y., October 17.

Walter A. RuKeyser, Consulting Engineer, New York City, N. Y., October 19.

E. J. Buczowski, Director in Charge of Manufacturing, Keasbey & Mattison Company, Ambler, Pa., October 22.

Harry E. Humphreys, President & Chairman of the Board, United States Rubber Company, New York City, October 24.

Ed. H. Anderson, Vice President, Asbestos Products Co., St. Paul, Minn., October 27.

L. R. Hoff, Consultant, Johns-Manville Corporation, New York City, October 27.

A. L. Wade, President, Asbestos Insulations, Reg'd., Montreal, Canada, October 28.

H. A. Dutton, Jr., President & Treasurer, Dutton Asbestos & Supply Co., San Francisco, Calif.

George L. Abbott, President & General Manager, Garlock Packing Co., Palmyra, N. Y., October 31.

F. E. Byrnes, Vice President & Director, The Ruberoid Co., New York City, October 31.

V. A. Spina, Treasurer, Scandinavia Belting Co., Newark, N. J., November 1.

A. M. Barranger, President, Acme Insulation Co., North Little Rock, Ark., November 2.

Ernest S. Sprinkmann, President, Sprinkmann Sons Corporation, Milwaukee, Wis., November 3.

Kozaburo Nozawa, President, Nozawa Asbestos Industrial Co., Ltd., Kobe, Japan, November 4.

William P. Barry, General Manager, Smith & Kanzler Corporation, Linden N. J., November 5.

Howard W. Allen, Vice President, Johns-Manville Corporation, New York City, November 5.

Charles W. Hanslip, President, Standco Brake Lining Co., Houston, Texas, November 8.

M. Nicolato, Vice President, Pacific Asbestos Cement Products Corporation, San Bernardino, Calif., November 13.

G. A. Rentschler, Chairman of Executive Committee, The Philip Carey Mfg. Company, Cincinnati, Ohio, November 14.

To all these gentlemen we extend best wishes and congratulations on the occasion of their birthdays.

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Transvaal Blue — Montasite — Amosite — Anthophyllite

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SOUTH AFRICAN ASBESTOS EXPORTERS' ASSOCIATION,
ASBESTOS & BASE MINERAL ASSOCIATION OF SOUTHERN AFRICA.

UNITED ASBESTOS CORPORATION

Details of the \$20,000,000 project which are designed to bring into production the asbestos ore bodies underlying Black Lake, in the Eastern Townships of Quebec, are reviewed for shareholders of United Asbestos Corporation in the company's annual report issued recently. President A. B. Davidson states the program is one of the largest engineering mining projects currently proceeding in Canada. It involves the draining of Black Lake itself, diversion of the Beauce River, construction of dams, spillways and drainage channels, creation of one of the world's largest open pits for asbestos mining and the installation of a plant capable of handling 1,500,000 tons of ore per annum.

Last May 6 the agreement was finalized between United Asbestos Corporation and American Smelting and Refining Company, under which Lake Asbestos of Quebec, subsidiary of the latter, provides the capital to bring the asbestos deposits into production and will therefore manage and operate. The basic agreement was signed 20 months earlier.

In the interim, President Davidson notes that Lake Asbestos spent several hundreds of thousands of dollars in evaluating the asbestos deposits at Black Lake and in undertaking extensive engineering and hydraulic studies.

As a result, when Quebec government approval by order-in-council was given, Lake Asbestos was ready to commence the actual project almost immediately.

American Smelting and Refining is now fully committed to the undertaking, and that organization has assumed all capital and operating expenditures, leaving United with no further outlays for these purposes.

From the presently-planned open pit, ore reserves to depth of 500 feet would permit an increase in daily tonnage substantially above the initial 5,000-ton rate if operating policy so decided, Mr. Davidson states. Ore reserves to that depth can sustain output at the initial rate of 50 to 75 years.

The engineers' reports give fibre and ore values, which in the aggregate, show overall grade higher than the average for the industry.

In summarizing the outlook for the property, President Davidson states that there is ample scope for a generous earnings record.

In terms of fibre production, it is estimated that the new property, at its projected mill rate, will produce more than 100,000 tons of fibre annually, equivalent to 20 to 25 per cent of the total current output of Canada's independent asbestos mines.

PABCO DIRECTORS RE-ELECTED

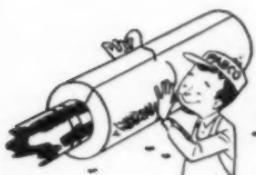
At the annual meeting of stockholders of Pabco Products Inc., held on September 28th, all Directors were re-elected, and officers of the company were later re-appointed by the Directors.

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Dependable precision in heat insulation, to meet modern engineering demands! Pabco "Precision Molded" 85% Magnesia combines time-tested superiority with precision molding — close tolerances, controlled sizes, light weight, uniform texture!



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PABCO PRODUCTS INC.

INSULATION DIVISION

San Francisco 19

New York 16

Manufacturers of Heat Insulation since 1920

CENTRAL ASBESTOS CO. LTD.

Central Asbestos Co. Ltd. is a member of a small group, the parent company of which is The Griqualand Exploration & Finance Co. Ltd.

Griqualand have been mining Cape Blue Asbestos in the Kuruman district for many years and at present are the second largest producer of this variety of Asbestos, operating three mining properties.

Central Asbestos Co. are responsible for the disposal of this Asbestos Fibre and also market all other types of asbestos. Central Asbestos Co. maintain Works in London situated in Bermondsey and Limehouse, both for storage and the processing of fibres to the customer's individual requirements. They do not manufacture any finished asbestos products but offer to the manufacturer a very comprehensive service which not only covers processing to any requirements, but also opportunity to draw from the very large and varied stocks carried in their various warehouses, which usually total something in excess of 1,000 tons.

In addition to this Central Asbestos Co. maintain an experimental department to assist any manufacturer with development problems and to render any assistance within its power.

Finally, to ensure maximum efficiency, they maintain their own shipping and distributing offices and a fleet of lorries to obviate any transport delays.

The registered offices are at Fenchurch House, 5 Fenchurch St., London, E. C. 3, and the main works offices at Abbey Street, London, S. E. 1.

JOHNS-MANVILLE CORPORATION

Change in Personnel

Joseph E. Kindregan, Assistant Milwaukee District Manager of the Johns-Manville Building Products Division, has been appointed Manager of the Division's Seattle, Washington District. He succeeds *Howard Anawalt*, who has resigned.

Also announced was the appointment of *Owen G. McKinney*, Senior Sales Representative for the Division in Southern and Western Colorado, to succeed Mr. Kindregan as Assistant Milwaukee District Manager.

Mr. Kindregan began his career with Johns-Manville in 1939 as Sales Representative at New York City. He has since represented the Company at LaCrosse, Wisconsin and Cincinnati, Ohio, and in 1951 was made Milwaukee Assistant District Manager of the Building Products Division.

Mr. McKinney joined Johns-Manville in 1936 at the Denver, Colorado District office. He was Sales Representative for the Building Products Division in Albuquerque, N. M. and Minot, N. D., and in 1943 was made Senior Sales Representative for the Division in Southern and Western Colorado.

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Reinforcing Values afforded by the use of Blue Asbestos
From the Mines of:**

Kuruman Cape Blue Asbestos Co.

Baboon Asbestos Co.

Harteskloof Asbestos Co.

Springbok Asbestos Co.

UNARCO SELLS NEW JERSEY PLANT

Sale of the Union Asbestos and Rubber Company's plant in Paterson, N. J., was recently announced by Edwin E. Hokin, President.

Union closed down its 110,000 square-foot plant because it was no longer needed due to the consolidation of a major portion of the company's fibrous products manufacturing activities at Bloomington, Illinois.

The sale marks the completion of Unarco's program to streamline the Fibrous Products Division. Increased efficiency and new machinery recently installed at Bloomington, Tyler, Texas and Marshville, N. C., have increased the company's productive capacity.

THE CAREY CO.

W. H. Skinner, Cincinnati District Manager, The Philip Carey Mfg. Company is retiring after 35 years of active service with the company. *J. W. Bartlett* has been named to succeed Mr. Skinner in the post he vacated.

Mr. Skinner served as Manager of the Carey Cincinnati District Auditor of sales, salesman, supervisor of sales and Assistant District from 1950 until his retirement. Previously, he had been an strict Manager.

Before taking over his new duties, Mr. Bartlett served as Assistant Sales Manager of the Industrial Insulation Division. He joined the Carey organization in 1940 as a sales trainee. In 1951 he was made Sales Supervisor of the Cleveland district.

NEW APPOINTMENT AT UNARCO

George D. Casgrain, Jr. has been appointed assistant secretary and assistant treasurer of the Union Asbestos & Rubber Company of Chicago.

Mr. Casgrain will replace *Paul M. Austin*, former secretary and treasurer, who has resigned.

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Aluminum Forms for Specials

Complete Plants for Making Sheets — Hatzehek System

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NEW BOOKLET ON REFRACTORY SELECTION

Basic Refractories, Inc., a leading manufacturer of granular basic furnace refractories, announces the availability of its new twelve page illustrated booklet, "A Guide For Refractory Selection".

Prepared mainly as a review of practically refractory problems and their solution, the booklet also discusses nomenclature generally applied to the various classes and types of granular refractories, outlining their characteristics and properties. Applications in both open hearth and electric steel-making furnaces are covered, as well as gunning and ramming techniques.

Copies are available from Basic Refractories, Inc., 845 Hanna Building, Cleveland 15, Ohio, upon request.

AMERICAN BRAKE SHOE CO.

Elects Vice-President

Edward R. Anderson has recently been elected a vice-president of American Brake Shoe Company. He will also continue as president of the AmForge Division of the company.

Mr. Anderson joined Brake Shoe in 1930 upon graduation from Yale University. He started as an apprentice in the company's Brake Shoe and Castings Division and in succeeding years held various engineering and sales positions in that division. In 1949 he was appointed vice-president of the company's Kellogg Division and vice-president of the BS&C Division in 1950. He became president of the AmForge Division in 1952. Mr. Anderson will continue to be located at the Chicago office of the company.

THE FLINTKOTE CO.

H. L. Evans has recently been named vice-president, in charge of manufacturing, of the Flintkote Company. With the firm for 25 years, Mr. Evans was formerly manager of the company's Chicago Heights plant.

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ASBESTOS STOCK QUOTATIONS

(These figures are compiled from the Commercial & Financial Chronicle. No guarantee as to their correctness.)

	Par	Low	High	Last
September 1954				
Amer. Br. Shoe (Com).....	np	32 1/4	34	33 5/8
Amer. Br. Shoe (Pfd).....	100	98	100	99 3/4
Armst. Ck. (Com).....	np	75 3/8	82 1/2	81 1/2
Armst. Ck. (Pfd).....	np	98 1/4	99 1/4	99 1/4
Armst. Ck. (Conv. Pfd).....	np	149 3/8	160	160
Asb. Corp. (Com).....	np	29	30 1/4	30 1/4
Carey (Com).....	10	22 1/4	22 1/4	22 1/4
Cassiar Asb. Corp.	np	\$5.75	\$6.00	\$5.75
Celotex (Com).....	np	22 1/4	23 1/8	23
Celotex (Pfd).....	20	17 1/2	18	18
Certainteed (Com).....	1	19 1/2	20 1/8	20
Dominion Asb. Mines.....	1	\$.22	\$.30	\$.23
Flintkote (Com).....	np	32 1/2	35 1/4	35 1/4
Flintkote (Pfd).....	np
Johns-Manville (Com).....	np	75 1/4	78 1/4	76 1/4
Natl. Gypsum (Com).....	1	32 1/2	35	34 1/2
Natl. Gypsum (Pfd).....	np	103 1/2	104 1/2	104 1/2
Pabco Products (Com).....	np	19 1/2	21 1/2	21 1/2
Pabco Products (Pfd).....	100	91 1/2	93	93
Ray-Man (Com).....	np	42 1/2	44 1/4	43
Ruberoid (Com).....	1	37 1/2	39	38
Thermoid (Com).....	1	7 1/8	7 1/2	7 1/2
Thermoid (Pfd).....	50	42	43	42 1/2
Union Asb. & Rub. (Com).....	5	9 1/2	9 3/4	9 1/2
United Asb. (Com).....	1	\$3.75	\$3.90	\$3.80
U. S. Gypsum (Com).....	20	172	185	180 1/2
U. S. Gypsum (Pfd).....	100	181	182 1/4	182 1/4
U. S. Rubber (Com).....	5	35	38 1/2	38 1/2
U. S. Rubber (Pfd).....	100	153 1/4	154 1/4	154 1/2

The skeptical worker who wants to know what he stands to gain from working safely will get a ready answer from the National Safety Council's new employee training booklet, "What's in It For Me?"

The 16-page booklet shows that everyone—the employer, the public and the worker—gains from a good safety program. Stressing the theme that no one is immune to accidents if he is not careful, the booklet drives home the fact that it is not where you work but how you work that makes for safety.

Illustrated in four colors, the booklet uses few words, but plenty of cartoons, to put across its message. For a sample copy and quantity prices, write the National Safety Council, 425 North Michigan Ave., Chicago 11, Ill.

CURRENT RANGE OF PRICE

As of October 10, 1954

Arizona—	Per Ton of 2,000 lbs., f.o.b. Globe, Arizona
No. 1 Crude (soft)	\$1,600.00 to \$1,700.00
No. 2 Crude (soft)	1,000.00 to 1,050.00
No. 3 Crude (soft)	450.00 to 500.00
Filter Fibre (soft)	250.00 to 450.00
No. 1 Crude (semi-soft)	1,200.00 to 1,500.00
No. 2 Crude (semi-soft)	900.00
No. 3 Crude (semi-soft)	400.00
Canada—	Per Ton (2000 lbs.) f.o.b. Mine
Group No. 1 (Crude No. 1)	\$1,100.00 to \$1,500.00
Group No. 2 Crude No. 2; Crude Run-of-Mine and Sundry	500.00 to 1,000.00
Group No. 3 (Spinning Fibre)	300.00 to 525.00
Group No. 4 (Shingle Fibre)	150.00 to 200.00
Group No. 5 (Paper Fibre)	100.00 to 140.00
Group No. 6 (Waste, Stucco or Plaster)	77.00
Group No. 7 (Refuse or Shorts)	35.00 to 70.00
Vermont— Per Ton of 2000 lbs. f.o.b. Hyde Park or Morrisville, Vt.	
Group No. 3 (Spinning & Filtering)	\$ 321.00 to \$ 348.00
Group No. 4 (Shingle Fibre)	156.00 to 173.00
Group No. 5 (Paper Fibre)	109.00 to 132.00
Group No. 6 (Waste, Stucco or Plaster)	77.00
Group No. 7 (Refuse or Shorts)	37.00 to 68.50

Imports of Asbestos by United Kingdom

Raw Materials

	July 1954
	Tons (2240 lbs.)
From Union of S. Africa	1,666
Southern Rhodesia	3,171
Basutoland, Bechuanaland and Swaziland	456
Canada	5,320
Other Commonwealth Countries and the Irish Republic	415
Foreign Countries	21

11,049

These figures were supplied by the Mining Journal Limited of London.

A. C. C. L.

A. C. C. L. will be known in the future as the American Council of Independent Laboratories, Inc. A change of name has been the subject of extended consideration over a period of years. A definite vote of members has registered a strong preference for the substitution of the word "independent" for "commercial." The new name has been well received and objective observers have commented that the name is more descriptive of the function of professional consulting laboratories.

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The Research & Control Instruments Division, North American Philips Company, Inc., Mount Vernon, N. Y. will occupy booth 1740 at the National Metals Show, International Amphitheatre, Chicago, November 1 to 5.

On display will be Noreleo X-ray Analysis Equipment including the Wide-Range Diffractometer, 90-degree Diffractometer, Spectrograph and Wide-Range Goniometer with Powder Cameras and Accessories. The new light-weight Portaflux unit which is small enough to go into a man-hole for magnetic-particle tests will also be shown.

"Techniques of Plant Maintenance & Engineering—1954", the annual volume containing the proceedings of the Plant Maintenance & Engineering Conference, was published in July by Clapp & Poliak, Inc., New York City.

The book, which has come to be regarded in engineering circles as the most important statement of current factory maintenance problems, is the most extensive ever published in the series. It contains texts of papers read by 24 authors, and direct answers to more than 1,300 questions. An outstanding new feature this year is the summary of 20 roundtable discussions, each of which ran for five hours.

The book is cloth-on-board bound, contains 291 pages, and is illustrated with 55 diagrams, charts and tables. Copies may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, for \$7.50.



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THE TWELVE ESTIMATING TABLES

The Twelve Estimating Tables, with Chart, convenient in figuring flange fittings and other areas, is \$1.00 per set.

These tables have been found very useful by estimators in figuring areas, but since we have not for some time published the detailed list, it occurred to us that many would like to know exactly what the tables cover, and order them before the fall work begins. Following is the list.

Sq. Ft. Areas of Pipe Covering.

Mean Sq. Ft. Areas Standard Screwed Fittings.

Mean Area Standard Weight Flanged Fittings.

Standard Weight Flange Areas, Permanent Type.

Standard Weight Flange Areas, Removable Type.

Figuring Hair Felt, 1", 1½", 2".

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Cork Pipe Covering, Outside Area in Sq. Ft.

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Outside Area in Sq. Ft.

Brine Thickness Cork Moulded Fittings, Screwed,
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